



# **An Introduction to Legacy Cleanup Non-TRU Waste Types**

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#### **Non-TRU Waste Streams**

#### Low-Level Radioactive Waste (LLW)

 Waste types that contain radioactivity and are not classified as transuranic (TRU) waste

#### Mixed Low-Level Radioactive Waste (MLLW)

• A waste type that contains both Hazardous Waste and LLW

#### **Non-Rad Waste Streams**

- Hazardous Waste
- Regulated Non-Hazardous Waste
- Universal Waste
- New Mexico Special Waste

#### **Non-TRU Waste Streams**

- TA-54 Area G
- Environmental Remediation (ER)
- Various TA-54 and ER Non-TRU Waste Containment
- Listed Hazardous Waste Categories
- Primary Listed Hazardous Waste

#### **Locations of Disposal Sites**

• Map of N3B shipping destinations







## **Non-TRU Waste Streams**

#### **Low-Level Waste**

• Waste types that contain radioactivity and are not classified as TRU waste. LLW is radioactive waste that is not transuranic waste, byproduct material or naturally occurring radioactive material.

#### **Mixed Low-Level Waste**

• LLW that also contains components that are chemically hazardous according to the Resource Conservation and Recovery Act (RCRA).



LLW (TA-54 Area G): Miscellaneous waste, such as personal protective equipment and sampling supplies





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## **Non-Rad Waste Streams**

#### **Hazardous Waste**

 "Characteristic" waste that is "listed" (i.e., D, F, P, etc.) and/or meets the criteria for being ignitable, corrosive, reactive or toxic. A waste is determined to be a hazardous waste if it is specifically listed on one of four lists (the F, K, P and U lists) found in title 40 of the Code of Federal Regulations (CFR) in part 261.

## **Regulated Non-Hazardous Waste**

• Items such as asbestos, antifreeze, grinding dusts and wastewater, if not disposed of correctly, pose a threat to the environment.

#### **Industrial waste**

- Non-contaminated PPE, cellulose material and vegetation generated during remediation that is not eligible for disposal in municipal landfill
- Mock-up Corrugated Metal Pipes (CMPs) filled with clean concrete
- TA-54 dome fabric generated during reskinning



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Twenty cubic yard roll-off with ~18m3 of LLW soil debris generated from Middle DP Road cleanup site





## **Non-Rad Waste Streams**

#### **Universal Waste**

Universal wastes are hazardous wastes, but commonly found in nonhazardous waste

landfills, as they are exempt from the hazardous waste standards under the household hazardous waste exclusion.

- Batteries (such as nickel-cadmium and lead-acid)
- Pesticides
- Mercury-containing equipment
- Lamps that exhibit a hazardous characteristic

#### **New Mexico Special Waste**

New Mexico Special Waste (NMSW) is regulated Non-Hazardous Waste that has unique handling, transportation or disposal requirements.

- Asbestos
- Petroleum-contaminated soil





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## Non-TRU Waste

## TA-54 Area G

- TRU Processing ~30% of TRU waste will be reclassified as LLW based on past experience
- Legacy waste containers
- Trailers with Internal Radiological Contamination
- Graphite shielding blocks
- Newly generated LLW (PPE, equipment, cellulose material)
- Drum compactors

#### **Environmental Remediation**

- Aggregate Area remediation (Lower Water Canyon, Twomile Canyon, Threemile Canyon, TA-21 and TA-33)
- Middle DP Road remediation
- Various well drilling activities



TA-54 Area G LLW Drums







## Various TA-54 and ER Non-TRU Waste Streams



TA-54 LLW Containers



TA-33 Supersacks





ER Well Drilling Water





## Various TA-54 and ER Non-TRU Waste Streams



TA-54 MLLW

TA-54 LLW Trailer

TA-54 LLW Containers







**Listed Hazardous Waste**: The Environmental Protection Agency (EPA) developed two primary approaches for designating a solid waste as hazardous:

- Characteristic Hazardous Wastes
  - Four generic physical/chemical properties that make it a hazard to human health or the environment.

Physical/Chemical Property	EPA Code	
Ignitability	D001	
Corrosivity	D002	
Reactivity	D003	
Toxicity	D004-D043	

#### • Listed Hazardous Waste

• Specific waste streams or chemicals that pose a known threat to human health or the environment when disposed.

EPA List	Definition
F	Nonindustry or Process Specific Waste
К	Industry or Nonprocess Specific Waste
Р	Discarded Commercial Chemical Products
U	Acutely Hazardous Discarded Commercial Chemical Products







## **Characteristic Hazardous Waste**

Characteristic Waste			
Ignitable D001	<ul> <li>flashpoint &lt;60°C or 140°F</li> <li>subject to spontaneous combustion</li> <li>flammable compressed gas as defined by the DOT</li> <li>DOT oxidizer</li> </ul>	<ul><li>naphtha</li><li>ethanol</li></ul>	
Corrosive D002	<ul> <li>pH of ≤2.0 or ≥12.5 or</li> <li>a liquid that corrodes steel at a rate &gt;0.25 in. (6.35 mm) per year at a test temperature of 55°C</li> </ul>	<ul><li>sulfuric acid</li><li>nitric acid</li><li>potassium hydroxide</li></ul>	
Reactive D003	<ul> <li>normally unstable and readily undergoes violent change without detonating</li> <li>reacts violently when mixed with water or generates toxic gases, vapors, or fumes</li> <li>forms potentially explosive mixtures when mixed with water</li> <li>cyanide- or sulfide-bearing waste that can generate toxic gases, vapors, or fumes when exposed to pH conditions between 2.0 and 12.5</li> <li>readily capable of detonation at standard temperature and pressure (STP)</li> <li>DOT Division 1.1, 1.2, or 1.3 explosive</li> </ul>	<ul><li>high explosives</li><li>cyanide salts</li></ul>	
Toxic D004– D043	<ul> <li>meets or exceeds the maximum toxic concentration limits that are based on the toxicity characteristic leaching procedure (TCLP) test</li> </ul>	<ul> <li>some organics (e.g., chloroform)</li> <li>certain metals (e.g., arsenic, barium, lead)</li> <li>certain pesticides</li> </ul>	







## N3B primarily deals with D- and F-listed waste generated during Environmental Remediation and TA-54 Legacy Waste

#### **D-Listed Waste**

- Soils and concrete contaminated with heavy metals, such as arsenic, lead, cadmium and mercury are the majority of the D-Listed waste encountered by N3B.
- Low-level legacy waste stored at TA-54 carries D-Listed codes as well.

#### **F-Listed Waste**

• Primarily soils contaminated with solvents such as benzene, toluene, xylene, etc.







## **Universal Waste Streams**





Lamps



Pesticides



#### **Batteries**



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Mercury





#### NMSW is a RCRA nonhazardous solid waste

Typical types of New Mexico Special Waste encountered are:

- Treated formerly characteristic hazardous wastes (no longer hazardous)
- Regulated asbestos waste
- Spilled chemical substance or commercial product
- Petroleum-contaminated soils







#### LLW is classified by its radiological hazard

Class A, B and C, with Class A being the least hazardous:

- Class A: on average, the least radioactive of the LLW classes. Primarily contaminated with "short-lived" radionuclides (average concentration: 0.1 curies)
- Class B: may be contaminated with a greater amount of "short-lived" radionuclides than Class A (average concentration: 2 curies)
- Class C: may be contaminated with greater amounts of long-lived and shortlived radionuclides than Class A or B (average concentration: 7 curies)







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## **Primary Waste Disposal Sites**











# Questions



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